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Do Sustainability, Green Innovation, and Digital Transformation Create Value? A Multiple Moderation Analysis

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Abstract

Purpose: This study examines whether sustainability, green innovation, and digital transformation contribute to firm value creation and whether institutional ownership and board independence strengthen these relationships.

Research Methodology: This study contributes to the literature by examining sustainability, green innovation, and digital transformation within an integrated value creation framework and by highlighting the moderating roles of two corporate governance mechanisms in the Indonesian manufacturing.

Results: Sustainability and green innovation have positive and significant effects on firm value, while digital transformation has no significant direct effect. Institutional ownership strengthens the effects of sustainability and green innovation, whereas board independence strengthens the effects of sustainability, green innovation, and digital transformation.

Conclusions: The findings suggest that sustainability and green innovation directly enhance firm value, while the value contribution of digital transformation depends on governance. Institutional ownership provides selective moderation, whereas board independence strengthens the value relevance of all three strategic initiatives, highlighting the importance of governance in firm value creation.

Limitations: The study focuses on manufacturing companies listed on the Indonesia Stock Exchange, which may limit the generalizability of the findings to other industries.

Contributions: This study integrates sustainability, green innovation, digital transformation, and corporate governance into a unified value-creation framework. It reveals distinct governance roles: institutional ownership selectively enhances the value of sustainability and green innovation, whereas board independence strengthens all three strategic initiatives. Empirically, it demonstrates how Indonesian manufacturing firms' governance conditions shape these initiatives' impact on firm value.

Keywords: *Board Independence, Corporate Governance, Digital Transformation, Green Innovation, Value Creation*

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1. Introduction

Sustainability, green innovation, and digital transformation are increasingly becoming important elements of corporate strategy. Companies face growing pressure to address environmental issues while maintaining competitiveness and adapting to rapid technological changes. Sustainability encourages firms to consider longer-term environmental and social consequences, while green innovation provides opportunities to develop environmentally friendly products and processes. At the same time, digital transformation changes how firms manage information, operations, and resources. These developments are increasingly connected with corporate value, although their economic benefits may vary across firms and business environments (Dinarjito, & Wibowo, 2026; Azzahra, Damayanti, & Dewi, 2025; Miranti, Irawan, & Puspitasari, 2025; Hirdinis, 2019).

Sustainability, green innovation, and digital transformation require substantial financial resources, managerial attention, and organizational changes, yet their implications for firm value are not necessarily uniform across firms and business environments. Existing empirical evidence remains mixed. Dinarjito and Wibowo (2026), for example, provide evidence that environmental and ESG-related factors are associated with firm value, while Azzahra et al. (2025) report different effects across green accounting, sustainability report disclosure, and environmental performance. Artika, Sisdianto, and Ekawati (2025) show that the relationship between green innovation and firm value can depend on environmental conditions. These findings indicate that the value implications of sustainability-oriented initiatives may vary according to the type of initiative and the conditions under which it is implemented.

A further limitation in the existing literature is that sustainability, green innovation, and digital transformation have often been examined separately, despite their increasingly interconnected roles in contemporary corporate strategy. Examining these initiatives within a single empirical framework can provide a more comprehensive understanding of how different strategic responses to environmental and technological pressures relate to firm value. Moreover, relatively limited attention has been given to the extent to which different corporate governance mechanisms condition these relationships. This issue is particularly relevant because governance mechanisms may differ in their monitoring scope and capacity to influence managerial decisions concerning environmental, innovation, and technology-related investments. Recent evidence from ASEAN companies indicates that institutional ownership can condition the relationship between green innovation and firm value Devi, Waspada, Nugraha, Sari, and Pranata (2026), providing an empirical basis for further examining governance as a boundary condition.

Against this background, this study investigates the relationships between sustainability, green innovation, digital transformation, and firm value while incorporating institutional ownership and board independence as distinct moderating mechanisms. By integrating these three strategic initiatives and two governance mechanisms into a single empirical model, the study extends existing evidence on firm value creation by examining both the direct value implications of sustainability-oriented and technology-related initiatives and the conditions under which these relationships become stronger.

2. Literature Review and Hypotheses Development

2.1 Theoretical Foundation

Taken together, these theories provide an integrated theoretical logic for the research model. Stakeholder Theory explains the value relevance of sustainability-oriented initiatives, the RBV explains how green innovation and digital transformation may represent value-generating capabilities, and Agency Theory explains why governance mechanisms may strengthen or weaken the translation of these initiatives into firm value. The hypotheses below are developed from this integrated perspective.

Agency Theory provides the theoretical basis for incorporating institutional ownership and board independence as moderating mechanisms. Because managers may have interests that differ from those of shareholders, monitoring mechanisms can reduce agency problems and improve the alignment of managerial decisions with shareholder interests (Jensen & Meckling, 1976). Institutional investors and

independent commissioners can provide additional monitoring of investments whose benefits are uncertain or realized over longer time horizons. Accordingly, stronger governance may influence whether sustainability, green innovation, and digital transformation are translated into outcomes that are recognized in firm value.

The Resource-Based View explains competitive advantage in terms of valuable, rare, difficult-to-imitate, and non-substitutable resources and capabilities (Barney, 1991). Green innovation and digital transformation can be interpreted as organizational capabilities that enable firms to use resources more efficiently, develop differentiated products or processes, and adapt to technological and environmental changes. However, the value of such capabilities depends on how effectively they are developed and deployed. This perspective therefore supports the expectation that strategic initiatives can contribute to firm value, while also allowing for differences in the magnitude of their effects across firms.

Stakeholder Theory suggests that firms create and sustain value by managing relationships with stakeholders whose support can affect the firm's resources, legitimacy, and long-term performance (Freeman, 1984). From this perspective, sustainability practices can strengthen stakeholder confidence and reduce environmental and social risks, while green innovation can demonstrate responsiveness to stakeholder expectations. These mechanisms provide a theoretical basis for expecting sustainability and green innovation to be associated with firm value because stakeholder-related benefits may influence future economic prospects and market assessments.

The relationships examined in this study can be understood through Stakeholder Theory, the Resource-Based View (RBV), and Agency Theory. These perspectives provide complementary explanations for why sustainability, green innovation, and digital transformation may affect firm value and why corporate governance may condition these effects.

2.2 Value Creation

Value creation is closely related to the ability of a company to generate future economic benefits through its business activities and managerial decisions (Zioło, Bąk, & Spoz, 2023; Grewal, Hauptmann, & Serafeim, 2021). From the perspective of corporate value, Risman (2021) defines firm value as the present value of future cash flows, where future cash flows are affected by risks that may cause deviations from expected outcomes. Firm value can also reflect the value of the firm's assets, including securities, and a higher firm value indicates greater prosperity for the owners.

This perspective places future cash flows and risk at the center of value creation. Business decisions that improve the firm's ability to generate future cash flows or reduce relevant risks may contribute to higher firm value. Conversely, initiatives that require substantial resources without producing sufficient future economic benefits may not necessarily create value. Therefore, value creation should not simply be understood as the implementation of particular business practices, but rather as the extent to which those practices contribute to the firm's future economic prospects.

In this study, value creation is conceptually represented by firm value. This distinction is important because value creation refers to the underlying economic outcome of managerial and strategic decisions, whereas firm value provides an observable, market-based representation of how those expected future benefits are assessed (Jung, & Yoo, 2023; Schiehll, & Kolahgar, 2021). For listed companies, this assessment is reflected in the market valuation of the firm (Fama, 1970). Accordingly, sustainability, green innovation, and digital transformation are examined as strategic practices that may contribute to value creation, while firm value represents the outcome through which such value implications can be empirically assessed (Devi, Waspada, Nugraha, Sari, & Pranata, 2026; Khanchel, Lassoued, & Baccar, 2023).

This conceptualization provides the basis for the main focus of this study, namely examining whether sustainability, green innovation, and digital transformation create value. The study does not assume that these initiatives automatically increase firm value. Instead, it examines whether their implementation is associated with higher firm value and whether this relationship is strengthened or

weakened by corporate governance mechanisms. Firm value can be measured through various proxies, such as Price to Book Value (PBV) or Market Value of Equity; however, in this study, firm value is proxied by Tobin's Q, as it captures both the market valuation of a firm's equity and debt relative to the replacement cost of its assets, thereby providing a comprehensive, market-based indicator of investors' assessment of the firm's future economic prospects (Chung, & Pruitt, 1994; Devi et al., 2026; Hashim, Yusoff, & Hassan, 2023).

2.3 Sustainability and Firm Value

Sustainability has increasingly become an important consideration in corporate decision-making because firms are expected to balance economic objectives with environmental and social responsibilities. From the perspective of firm value, sustainability practices may improve a firm's long-term prospects by supporting resource efficiency, managing environmental and social risks, and strengthening stakeholder confidence (Bodhanwala, & Bodhanwala, 2023; Zhou, Liu, & Luo, 2022). These benefits may influence investors' expectations regarding future cash flows and consequently affect the market valuation of the firm.

However, the relationship between sustainability and firm value is not necessarily consistent. Sustainability initiatives and reporting require resources, while their benefits may take time to be recognized by investors. Empirical evidence in Indonesia provides mixed results. Suhartini and Yunida (2024a) found that sustainability reporting did not have a significant direct effect on firm value among manufacturing companies, whereas other studies report that sustainability-related information can be positively valued by the market. Evidence from Goodwood also shows that environmental-related practices can influence firm value, although the effects differ across measures. Azzahra, Damayanti, and Dewi (2025) found that green accounting had a positive effect on firm value among Indonesian manufacturing firms, while environmental performance was not significant.

Despite these mixed findings, sustainability can provide economic benefits when its implementation strengthens the firm's long-term prospects and reduces risks that are relevant to investors. Therefore, firms with stronger sustainability practices are expected to receive more favorable market assessments, resulting in higher firm value. Based on this argument, the first hypothesis is formulated as follows:

H_1: Sustainability has a positive effect on firm value

2.4 Green Innovation and Firm Value

Green innovation refers to the development or adoption of products, processes, or technologies that reduce environmental impacts while supporting operational efficiency and competitiveness. From a firm value perspective, green innovation can provide economic benefits through more efficient resource use, lower environmental risks, improved corporate reputation, and product differentiation. These benefits may strengthen the firm's future economic prospects and consequently be reflected in its market valuation. Khalil, Khalil, and Khalil (2022) and Husnaini and Tjahjadi (2021) found that the combination of quality management and green process innovation can improve firm value, although the economic consequences differ between green process and green product innovation.

Empirical evidence nevertheless remains mixed. A recent study of Indonesian manufacturing firms found that green innovation has a positive effect on firm value, while environmental performance did not significantly strengthen the relationship (Artika, Sisdianto, & Ekawati, 2025). Other recent evidence suggests that the value relevance of green innovation is not uniform across firms. Dai and Xue (2022) found that the effect of green innovation on firm value varies across different stages of the enterprise life cycle, indicating that the market benefits of green innovation are not necessarily automatic but depend on firm-specific conditions. Despite these differences, green innovation is expected to contribute positively to firm value because its environmental benefits can be accompanied by efficiency gains, reduced risks, and stronger competitive positioning. Accordingly, the second hypothesis is formulated as follows:

H_2: Green innovation has a positive effect on firm value

2.5 Digital Transformation and Firm Value

Digital transformation refers to the integration of digital technologies into business processes, organizational activities, and decision-making to improve the way firms create and capture value. The use of technologies such as artificial intelligence, big data, cloud computing, and digital platforms can improve operational efficiency, information quality, innovation capability, and responsiveness to market changes (Wang & Xia, 2024). These improvements may strengthen firms' competitive positions and future economic prospects, which in turn can be reflected in higher firm value. Empirical evidence supports this possibility, as Eriandani and Winarno (2023) and Zareie, Attig, and Fooladi (2024) found that digital transformation is positively associated with corporate value and that organizational capital and corporate governance play important roles in determining the value obtained from digital transformation.

Nevertheless, digital transformation does not automatically result in higher firm value. The substantial investment required, implementation complexity, and difficulty of converting digital capabilities into economic benefits may limit its direct financial consequences. Recent evidence from Indonesian listed firms found that digital transformation had no significant direct effect on firm value, with its effect operating through ESG performance instead (Mukti, 2026). At the same time, other Indonesian evidence reports a positive association between digital transformation and firm value, indicating that its economic consequences may depend on how effectively firms translate digital capabilities into operational and strategic benefits (Siswanti, Riyadh, Cahaya, Putra, & Beshr, 2024a). Based on these arguments, digital transformation is expected to have a positive effect on firm value.

H_3: Digital transformation has a positive effect on firm value

2.6 Institutional Ownership as a Moderator

Institutional ownership can influence how firms' strategic initiatives are monitored and evaluated by the capital market. Institutional investors generally have greater resources and incentives to monitor management and may therefore encourage managers to pursue strategies that are consistent with long-term corporate interests. In the context of sustainability, green innovation, and digital transformation, stronger institutional monitoring may increase the likelihood that these initiatives are implemented effectively and their potential economic benefits are recognized by investors. Thus, institutional ownership may not only affect firm value directly but may also alter the extent to which strategic initiatives are translated into firm value.

The moderating role of institutional ownership is particularly relevant because the benefits of sustainability-related initiatives are not always immediately observable. From an Agency Theory perspective, institutional investors can reduce agency problems by monitoring managerial decisions, questioning inefficient resource allocation, and encouraging strategies that protect long-term shareholder interests (Jensen & Meckling, 1976). This monitoring can be especially relevant to sustainability and green innovation because their benefits may involve risk reduction, reputation, resource efficiency, and longer-term competitive advantages. Devi et al. (2026) provide empirical support for this boundary-condition argument by showing that institutional ownership strengthens the relationship between green innovation and firm value in ASEAN energy companies.

However, the same monitoring mechanism may not operate equally across all strategic initiatives. Digital transformation involves technological uncertainty, organizational restructuring, specialized knowledge, and benefits that may be difficult for external owners to evaluate from reported information alone. Although institutional investors can exert monitoring pressure, they may have less direct involvement in the design and implementation of complex digital projects. By contrast, sustainability and green innovation often generate signals that can be more directly connected to environmental performance, resource efficiency, and long-term risk management. Accordingly, institutional ownership is expected to provide stronger monitoring conditions for sustainability and green innovation, while its moderating role in digital transformation may be weaker. This distinction is consistent with the broader evidence that the value consequences of digital transformation depend on complementary organizational and governance capabilities (Zareie et al., 2024; Mukti, 2026).

For sustainability, stronger institutional ownership is expected to encourage management to implement sustainability practices more substantively and consistently, increasing their potential contribution to firm value. A similar argument applies to green innovation because institutional investors may support investments whose benefits arise through efficiency improvements, risk reduction, and long-term competitiveness. For digital transformation, however, the monitoring advantage of institutional ownership may be constrained by the complexity and information requirements of technology investments. Institutional investors may therefore be less able to ensure that digital transformation is translated into measurable economic benefits than they are for initiatives whose outcomes are more readily connected to sustainability and innovation indicators. On this basis, institutional ownership is expected to strengthen the relationships for sustainability and green innovation, while a weaker or non-significant moderating effect is theoretically plausible for digital transformation.

H_4: Institutional ownership strengthens the positive effect of sustainability on firm value

H_5: Institutional ownership strengthens the positive effect of green innovation on firm value

H_6: Institutional ownership strengthens the positive effect of digital transformation on firm value

2.7 Board Independence as a Moderator

Board independence is an important corporate governance mechanism because independent board members can provide objective oversight of management and reduce the possibility of managerial decisions being driven primarily by short-term interests. In the context of sustainability, green innovation, and digital transformation, independent oversight may improve the alignment between strategic investments and long-term corporate objectives. Stronger board independence may also enhance the credibility of information provided to investors, making the potential economic benefits of these initiatives more visible in the firm's market valuation (Fasya et al., 2024; Nuryadi & Aziza, 2025).

Due to their uncertainty, long-term horizons, and high managerial discretion, sustainability, green innovation, and digital transformation strongly require board independence. Agency Theory suggests that independent directors can monitor management from within the firm's formal governance structure and challenge decisions that may not adequately protect shareholder interests (Jensen & Meckling, 1976). Unlike institutional ownership, which primarily represents an ownership-based external monitoring mechanism, board independence operates through direct participation in oversight, evaluation, and strategic governance. This distinction is important for digital transformation because digital investments require continuing assessment of technology choices, organizational readiness, implementation risks, and alignment with corporate strategy.

Empirical evidence also supports the relevance of governance to the value implications of digital and sustainability initiatives. Zareie et al. (2024) show that organizational capital and corporate governance influence the value obtained from digital transformation, while Angir and Weli (2024) find that board independence strengthens the relationship between ESG disclosure and firm value in Indonesian listed companies. These findings provide a basis for expecting independent boards to improve the credibility and strategic discipline surrounding sustainability, green innovation, and digital transformation. Because independent directors can evaluate management decisions across different types of strategic investment, their moderating role may be broader than that of institutional ownership, particularly for complex digital investments whose economic benefits are difficult to assess through ownership monitoring alone.

Accordingly, higher board independence is expected to strengthen the positive relationships between sustainability, green innovation, and digital transformation and firm value. The hypotheses are formulated as follows:

H_7: Board independence strengthens the positive effect of sustainability on firm value

H_8: Board independence strengthens the positive effect of green innovation on firm value

H₉: Board independence strengthens the positive effect of digital transformation on firm value

2.8 Research Framework

Based on the preceding discussion, this study proposes an integrated framework to examine the relationship between sustainability, green innovation, digital transformation, and firm value. Sustainability, green innovation, and digital transformation are positioned as the main explanatory variables, while firm value represents the dependent variable. The framework further incorporates institutional ownership and board independence as moderating variables to examine whether corporate governance mechanisms influence the strength of these relationships.

The proposed framework consists of three direct relationships and six moderating relationships. Institutional ownership is expected to strengthen the effects of sustainability, green innovation, and digital transformation on firm value, while board independence is likewise expected to strengthen these relationships. The conceptual framework is presented in Figure 1.

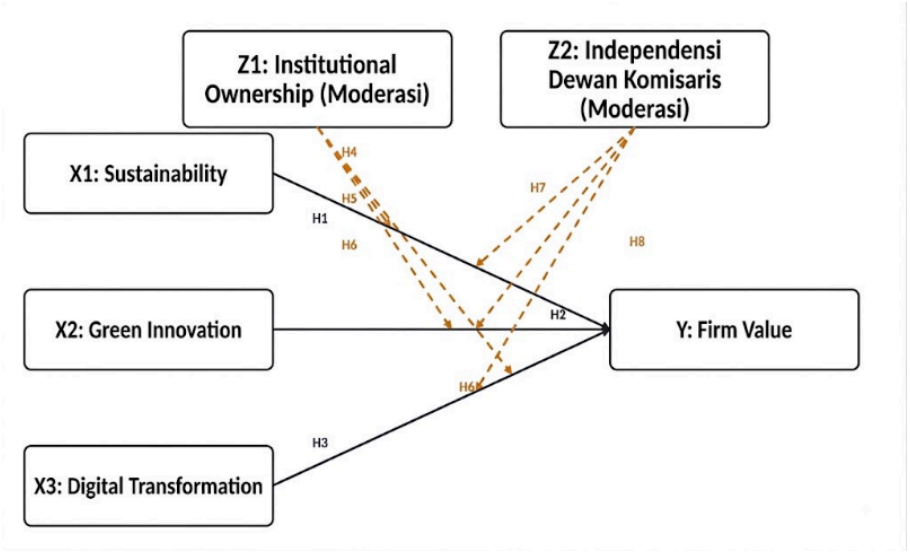


Figure 1. Research framework

3. Research Methodology

3.1 Research Design and Sample

This study employs a quantitative explanatory approach using secondary panel data to examine the effects of sustainability, green innovation, and digital transformation on firm value and the moderating roles of institutional ownership and board independence. The sample consists of 21 manufacturing companies listed on the Indonesia Stock Exchange during 2018–2024, resulting in 147 firm-year observations.

3.2 Variables and Measurement

Firm value is the dependent variable, while sustainability, green innovation, and digital transformation are the independent variables. Institutional ownership and board independence are specified as moderating variables. The study also includes firm size, leverage, and profitability (ROA) as control variables.

Table 1. Measurement of variables

Variables	Measurement
Firm Value	Tobin Q
Sustainability	ESG score
Green Innovation	Green innovation index
Digital Transformation	Digital transformation disclosure index
Institutional Ownership	Institutional shares / total shares

Variables	Measurement
Board Independence	Independent commissioners / total commissioners

Table 1 shows the data are analyzed using panel-data regression. The Chow and Hausman tests are used to determine the appropriate panel estimation model, with the results indicating the Fixed Effect Model (FEM) as the preferred specification. Moderating effects are examined using interaction terms between each independent variable and the respective moderator. This approach is consistent with moderated regression analysis, in which the interaction coefficient represents the moderation effect (Park & Yi, 2022).

4. Results and Discussions

4.1 Result

Table 2. Regression results: Institutional ownership model

Variables	Coefficient	Prob.
Sustainability	0.011	0.0067
Green Innovation	0.017	0.0009
Digital Transformation	0.006	0.3215
Institutional Ownership	0.382	0.0461
Sustainability × Institutional Ownership	0.007	0.0211
Green Innovation × Institutional Ownership	0.010	0.0136
Digital Transformation × Institutional Ownership	0.005	0.2136

Based on Table 2, sustainability has a positive and significant effect on firm value, while green innovation also shows a positive and significant effect. In contrast, digital transformation has a positive but insignificant effect on firm value. The interaction results further show that institutional ownership significantly strengthens the effects of sustainability and green innovation on firm value. However, the interaction between digital transformation and institutional ownership is not statistically significant.

Table 3. Regression results: Board independence model

Variables	Coefficient	Prob.
Sustainability	0.010	0.0136
Green Innovation	0.015	0.0032
Digital Transformation	0.005	0.4063
Board Independence	0.615	0.0160
Sustainability × Board Independence	0.013	0.0104
Green Innovation × Board Independence	0.015	0.0136
Digital Transformation × Board Independence	0.011	0.0295

Based on Table 3, sustainability and green innovation have positive and significant effects on firm value, with coefficients of 0.010 (p = 0.0136) and 0.015 (p = 0.0032), respectively. In contrast, digital transformation has a positive but insignificant effect on firm value (coefficient = 0.005; p = 0.4063). Board independence has a positive and significant effect on firm value (coefficient = 0.615; p = 0.0160). The interaction terms indicate that board independence significantly strengthens the effects of sustainability, green innovation, and digital transformation on firm value, with p-values of 0.0104, 0.0136, and 0.0295, respectively.

4.2 Discussions

4.2.1 Direct Effects of Sustainability, Green Innovation, and Digital Transformation

The results indicate that sustainability has a positive and significant effect on firm value. This finding suggests that sustainability practices can be perceived by the market as an indication of the firm's ability to manage environmental and social risks while maintaining its long-term economic prospects. The result is consistent with the view that sustainability-related information can improve transparency and stakeholder confidence, thereby supporting market valuation. Similar evidence has also been reported in recent studies of Indonesian firms, although the strength of this relationship varies across sectors and measures of sustainability (Sahetapy, 2023; Suhartini, Tjahjadi, & Fayanni, 2024b).

Green innovation also has a positive and significant effect on firm value. This result indicates that environmental-oriented innovation is not necessarily viewed only as an additional cost. Rather, it may signal the firm's ability to develop products, processes, and technologies that respond to environmental pressures while creating future economic benefits. The finding is also consistent with recent Indonesian evidence showing that green innovation can contribute positively to firm value, although its effect may depend on governance and ownership conditions.

In contrast, digital transformation does not have a significant direct effect on firm value. This finding indicates that digital investment alone may be insufficient to produce an observable market-value premium. From the Resource-Based View, digital technologies can become valuable capabilities only when firms possess the organizational capacity to integrate, deploy, and reconfigure them effectively. Digital transformation also involves substantial investment, implementation complexity, and uncertainty about the timing and magnitude of returns. The result is consistent with Mukti (2026), who found no significant direct effect of digital transformation on firm value among Indonesian listed firms, while other evidence reports positive associations when complementary organizational or governance conditions are present (Siswanti, Riyadh, Nawangsari, Yusoff, & Wibowo, 2024b; Zareie, Attig, & Fooladi, 2024). The finding therefore supports a contingent interpretation: digital transformation may create value, but its economic contribution depends on complementary organizational and governance conditions rather than on technology adoption alone.

4.2.2 Institutional Ownership as a Moderator

The findings show that institutional ownership significantly strengthens the effects of sustainability and green innovation on firm value, but does not significantly moderate the relationship between digital transformation and firm value. The strengthening effects suggest that institutional investors may provide additional monitoring and place greater attention on sustainability-related strategies, making sustainability and green innovation initiatives more credible to the market. Recent Indonesian evidence also shows that institutional ownership can play a moderating role in the relationship between environmental disclosure or green innovation and firm value (Devi et al., 2026).

The absence of a moderating effect on digital transformation suggests that institutional ownership alone may not be sufficient to translate technological investment into market value. This result is theoretically consistent with Agency Theory because ownership monitoring may be constrained when strategic investments involve high technological complexity and information asymmetry. Institutional investors can exert pressure on management, but they may not have the same direct access to implementation decisions as independent board members. In contrast, the significant moderation for sustainability and green innovation is consistent with the argument that institutional monitoring can strengthen the credibility and discipline of initiatives whose environmental and strategic outcomes can be more readily assessed. The result also complements Devi et al. (2026), who identify institutional ownership as a boundary condition for green innovation and firm value, while showing that this boundary condition may be selective rather than universal across strategic initiatives.

4.2.3 Board Independence as a Moderator

Board independence produces a broader moderating effect. The interaction terms show that board independence significantly strengthens the relationships between sustainability, green innovation, and digital transformation and firm value. This broader effect can be interpreted through Agency Theory: independent commissioners are positioned within the firm's formal governance structure and can directly scrutinize managerial decisions, resource allocation, and strategic implementation. Their oversight can therefore complement the capability-building role described by the Resource-Based View by helping ensure that strategic resources are deployed consistently with long-term value objectives. The finding is also consistent with Angir and Weli (2024), who show that board independence strengthens the relationship between ESG disclosure and firm value, and with Zareie et al. (2024), who emphasize the role of governance in determining the value obtained from digital transformation.

The strongest implication concerns digital transformation. Although digital transformation has no significant direct effect on firm value, its interaction with board independence is positive and significant. This contrast suggests that digital capability is not automatically converted into market value; instead, independent oversight may provide the governance conditions needed to evaluate technology investments, control implementation risks, and align digital initiatives with corporate strategy. The result extends the direct-effect evidence reported by Mukti (2026) by indicating that the absence of a direct relationship does not necessarily mean that digital transformation lacks value relevance; its value implications may emerge under an appropriate governance configuration. It also provides empirical support for the contingency perspective underlying this study: the ability of strategic initiatives to create firm value depends not only on the initiatives themselves but also on the governance conditions surrounding their implementation. The finding helps explain why board independence produces a broader moderating effect than institutional ownership in this study.

5. Conclusions

5.1 Conclusion

The findings indicate that sustainability and green innovation are not merely responses to environmental and social pressures but can become sources of firm value when they are integrated into corporate strategies. Their positive association with firm value suggests that investors recognize the economic relevance of sustainability-oriented practices and environmentally driven innovation. The findings for digital transformation provide a different perspective. Digital transformation alone does not appear to translate automatically into higher firm value, suggesting that technological investment requires appropriate organizational and governance conditions to generate observable economic benefits. This relationship, however, changes when board independence is considered. Independent board oversight strengthens the value relevance of digital transformation, as well as the effects of sustainability and green innovation.

Overall, the findings indicate that the value implications of sustainability, green innovation, and digital transformation are contingent on governance conditions. Sustainability and green innovation show direct positive associations with firm value, whereas digital transformation does not show a significant direct association but becomes value-relevant when accompanied by stronger board independence. Institutional ownership shows selective moderating effects, strengthening the relationships for sustainability and green innovation but not for digital transformation. Theoretically, the study contributes by integrating Stakeholder Theory, the Resource-Based View, and Agency Theory into a single framework for explaining how sustainability, green innovation, and digital transformation jointly relate to firm value under different governance conditions.

This integration extends prior approaches that tend to examine strategic initiatives or governance mechanisms separately by showing that the value relevance of these initiatives can be contingent on the type of monitoring mechanism involved. In particular, the contrasting moderation patterns between institutional ownership and board independence provide a more differentiated explanation of how governance can condition the conversion of strategic investments into firm value. The significant

interaction between digital transformation and board independence further indicates that technological capabilities may require an appropriate governance mechanism before their potential value becomes observable in the market. Practically, the findings indicate that managers should consider governance arrangements alongside investments in sustainability, green innovation, and digital transformation, particularly where benefits are uncertain or require longer time horizons to materialize. Boards and institutional investors may also use their monitoring roles to assess whether these initiatives are aligned with long-term value creation and supported by credible implementation.

5.2 Research Limitations

This study is subject to several limitations. The analysis focuses on manufacturing companies listed on the Indonesia Stock Exchange, which may limit the generalizability of the findings to other industries. In addition, the measurement of sustainability, green innovation, and digital transformation may not fully capture the diverse forms and quality of these practices across firms. The observation period may also contain external conditions that influence firms' strategic decisions and market valuation.

5.3 Suggestions and Directions for Future Research

Future research may extend the analysis to other industries and broader samples to examine whether the findings remain consistent across different business contexts. Further studies may also employ alternative or more comprehensive measures of sustainability, green innovation, and digital transformation, as well as examine other governance mechanisms that may influence how these strategic initiatives contribute to firm value.

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Author Contributions

AK contributed to the conceptualization, methodology, data collection, formal analysis, investigation, and preparation of the original draft. AR contributed to supervision, validation, interpretation of the findings, writing, review and editing. Both authors contributed to the development of the research framework, reviewed the manuscript, approved the final version, and agreed to be accountable for all aspects of the work.

References

Angir, P., & Weli, W. (2024). The influence of environmental, social, and governance (ESG) disclosure on firm value: An asymmetric information perspective in Indonesian listed companies. *Binus Business Review*, *15*(1), 29-40. https://doi.org/10.21512/bbr.v15i1.10460

Artika, M., Sisdianto, E., & Ekawati, E. (2025). Pengaruh emisi karbon, inovasi hijau terhadap nilai perusahaan dengan moderasi kinerja lingkungan. *Studi Ekonomi dan Kebijakan Publik*, *4*(1), 41-56. https://doi.org/10.35912/sekp.v4i1.5456

Azzahra, A. C., Damayanti, & Dewi, A. K. (2025). The influence of green accounting, sustainability report disclosure and environmental performance on firm value. *Goodwood Accounting and Auditing Review*, *4*(1), 73-85. https://doi.org/10.35912/gaar.v4i1.5386

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, *17*(1), 99-120. https://doi.org/10.1177/014920639101700108

Bodhanwala, S., & Bodhanwala, R. (2023). Environmental, social and governance performance: Influence on market value in the COVID-19 crisis. *Management Decision*, *61*(8), 2442-2466. https://doi.org/10.1108/MD-08-2022-1084

Chung, K. H., & Pruitt, S. W. (1994). A simple approximation of Tobin's q. *Financial Management*, *23*(3), 70-74.

Dai, D., & Xue, Y. (2022). The impact of green innovation on a firm's value from the perspective of enterprise life cycles. *Sustainability*, *14*(3), 1226. https://doi.org/10.3390/su14031226

Devi, W. S. G. R., Waspada, I., Nugraha, N., Sari, M., & Pranata, R. M. (2026). Institutional ownership as boundary condition of green innovation and firm value in ASEAN. *Jurnal Akuntansi, Keuangan, dan Manajemen*, *7*(3), 461-471. https://doi.org/10.35912/jakman.v7i3.6756

Dinarjito, A., & Wibowo, P. (2026). Environmental, social, and governance and firm value: The mediating role of financial performance in Indonesia. *Jurnal Akuntansi, Keuangan, dan Manajemen*, *7*(3), 341-355. https://doi.org/10.35912/jakman.v7i3.6517

Eriandani, R., & Winarno, W. A. (2023). ESG and firm performance: The role of digitalization. *Journal of Accounting and Investment*, *24*(3), 993-1010. https://doi.org/10.18196/jai.v24i3.20044

Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*, *25*(2), 383-417.

Fasya, M., Susilowati, R. Y. N., Septiyanti, R., & Kusumawardani, N. (2024). Pengaruh carbon emission disclosure dan good corporate governance terhadap nilai perusahaan: Studi empiris pada perusahaan sektor transportasi dan logistik yang terdaftar di Bursa Efek Indonesia periode 2017–2022. *Jurnal Studi Pemerintahan dan Akuntabilitas*, *4*(1), 1-16. https://doi.org/10.35912/jastaka.v4i1.3403

Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Pitman.

Grewal, J., Hauptmann, C., & Serafeim, G. (2021). Material sustainability information and stock price informativeness. *Journal of Business Ethics*, *171*(3), 513-544. https://doi.org/10.1007/s10551-020-04451-2

Hashim, N., Yusoff, W. S. W., & Hassan, S. (2023). Determinants of firm value as measured by the Tobin's Q: A case of Malaysian plantation sector. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, *13*(2), 420-432. https://doi.org/10.6007/IJARAFMS/v13-i2/17268

Hirdinis, M. (2019). Capital structure and firm size on firm value moderated by profitability. *International Journal of Economics and Business Administration*, *7*(1), 174-191. https://doi.org/10.35808/ijeba/204

Husnaini, W., & Tjahjadi, B. (2021). Quality management, green innovation and firm value: Evidence from Indonesia. *International Journal of Energy Economics and Policy*, *11*(1), 255-262. https://doi.org/10.32479/ijeep.10282

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), 305-360. https://doi.org/10.1016/0304-405X(76)90026-X

Jung, S., & Yoo, S. (2023). Sustainability reporting and firm value: Evidence from global listed companies. *Corporate Social Responsibility and Environmental Management*, *30*(5), 2417-2432. https://doi.org/10.1002/csr.2495

Khalil, M. A., Khalil, R., & Khalil, M. K. (2022). Environmental, social and governance (ESG)-augmented investments in innovation and firms' value: A fixed-effects panel regression of Asian economies. *China Finance Review International*, *13*(4), 546-570. https://doi.org/10.1108/CFRI-05-2022-0067

Khanchel, I., Lassoued, N., & Baccar, I. (2023). Sustainability and firm performance: The role of ESG disclosure and green innovation. *Management Decision*, *61*(9), 2720-2739. https://doi.org/10.1108/MD-09-2021-1252

Miranti, F., Irawan, I., & Puspitasari, E. Y. (2025). The influence of green accounting, environmental performance, and firm size on firm value. *Jurnal Akuntansi, Keuangan, dan Manajemen*, *7*(1), 389-403. https://doi.org/10.35912/jakman.v7i1.5050

Mukti, A. H. (2026). Digital transformation and firm value in Indonesia: Unpacking the roles of environmental, social and governance performance and corporate innovation. *Cogent Business & Management*, *13*(1), 1-18. https://doi.org/10.1080/23311975.2026.2684102

Nuryadi, N., & Aziza, N. (2025). Corporate governance and sustainability reporting: Implications for firm performance. *Jurnal Akuntansi, Keuangan, dan Manajemen*, *7*(1), 375-388. https://doi.org/10.35912/jakman.v7i1.5423

Park, S.-J., & Yi, Y. (2022). Assessing moderator effects, main effects, and simple effects without collinearity problems in moderated regression models. *Journal of Business Research*, *145*(4), 905–919. https://doi.org/10.1016/j.jbusres.2022.03.018

Risman, A. (2021). *Kurs mata uang dan nilai perusahaan*. CV. Pena Persada.

Sahetapy, K. (2023). Sustainability report and firm value: An evidence from Indonesia. *Jurnal Riset Akuntansi dan Auditing*, *10*(1), 1-8. https://doi.org/10.55963/jraa.v10i1.513

Schiehll, E., & Kolahgar, S. (2021). Financial materiality in the informativeness of sustainability reporting. *Business Strategy and the Environment*, *30*(2), 840-855. https://doi.org/10.1002/bse.2657

Siswanti, I., Riyadh, H. A., Cahaya, Y. F., Putra, Y. M., & Beshr, B. A. H. (2024a). Unveiling the dynamics of the business sustainability model: A holistic analysis of financial and digital transformation. *Cogent Business & Management*, *11*(1), 1-21. https://doi.org/10.1080/23311975.2024.2414857

Siswanti, I., Riyadh, H. A., Nawangsari, L. C., Yusoff, Y. M., & Wibowo, M. W. (2024b). The impact of digital transformation for sustainable business: The mediating role of corporate governance and financial performance. *Cogent Business & Management*, *11*(1), 1-16. https://doi.org/10.1080/23311975.2024.2316954

Suhartini, D., Cahyani Putri, M. I., & Yunida Putri, S. (2024a). Examining the sustainability report, financial performance, and value of mining companies in Indonesia. *Ilomata International Journal of Tax and Accounting*, *5*(1), 266-279. https://doi.org/10.52728/ijtc.v5i1.1064

Suhartini, D., Tjahjadi, B., & Fayanni, Y. (2024b). Impact of sustainability reporting and governance on firm value: Insights from the Indonesian manufacturing sector. *Cogent Business & Management*, *11*(1), 1-19. https://doi.org/10.1080/23311975.2024.2381087

Wang, D., & Xia, X. (2024). The impact of digital transformation on firms' value: Examining the role of ESG performance and the effect of information interaction. *Business Process Management Journal*, *30*(4), 1236-1265. https://doi.org/10.1108/BPMJ-06-2023-0469

Zareie, M., Attig, N., El Ghoul, S., & Fooladi, I. (2024). Firm digital transformation and corporate performance: The moderating effect of organizational capital. *Finance Research Letters*, *61*(12), 105032. https://doi.org/10.1016/j.frl.2024.105032

Zhou, G., Liu, L., & Luo, S. (2022). Sustainable development, ESG performance and company market value: Mediating effect of financial performance. *Business Strategy and the Environment*, *31*(7), 3371-3387. https://doi.org/10.1002/bse.3089

Zioło, M., Bąk, I., & Spoz, A. (2023). Theoretical framework of sustainable value creation by companies. What do we know so far?. *Corporate Social Responsibility and Environmental Management*, *30*(5), 2344-2361. https://doi.org/10.1002/csr.2489